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The effectiveness of relaxation training in the quality of life and anxiety of patients with asthma

Abstract

Introduction: With a 5–10% global prevalence, asthma, as a chronic condition which can strongly affect the quality of life of patients and care givers, needs comprehensive approach, including medications and psychological techniques, to get the optimal control. This is why the current study aimed to assess the effectiveness of the Papworth method relaxation training among patients with asthma, considering reduced anxiety and improved quality of life.

Material and methods: Through a randomized controlled trial, 30 patients with asthma 20–45 years of age referring to a tertiary university hospital in Tehran enrolled two study groups, including disease cases and controls. The Papworth method of relaxation was used and was finally assessed for its effectiveness by two questionnaires, namely STAI for anxiety and SF-36 for the quality of life. Pre-test and post-test were done for both groups.

Results: The scores of the anxiety questionnaire (STAI) before and after the intervention were significantly different, and the mean scores obviously reduced after relaxation training among cases from 102.6 to 79.5. The scores of the QOL grew clearly after relaxation training in the case group from 308.07 to 546.6.

Conclusions: As an accessory helpful treatment, relaxation training Papworth method sounds to be perfectly able to control stressful conditions in patients with asthma to prevent disease attacks and improve the quality of life. So, psychological teams can be advised to referral centers for asthma in the relevant clinics to help people get training in this regard.

Key words: asthma, relaxation training, quality of life, anxiety, SF-36 questionnaire

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Introduction

For overt and covert, psychological problems are usually known as risk factors of poor prognosis, even death, among asthma patients. These challenges such as stress and anxiety, depression, anger, etc. could facilitate and trigger asthma exacerbations and finally, misadjusted patient's quality of life [1]. For instance, stress exacerbates the local inflammation and smooth muscle contraction of the airways and would increase asthma attacks up to 20–40% [2, 3], mainly by cytokine release. Around 20–35% of asthma patients experienced exacerbations through stressful condition [4]. Throughout recent decades, many studies have been conducted focusing on the role of psychologic challenges in asthma like Esko Teirama's work in 2002 that shows more frequent depression and suppression in advanced asthma [5]. The authors of other similar researches believe in some psychological problems like depression and anxiety as the consequences of the disease as well; which make the prognosis much poorer [6–11].

In addition, authors and researchers have endorsed a common correlation between anxiety, excitement, airway contractions and autonomic nervous system involvement as factors of asthma attacks [12]. In these circumstances, medications alone sound inadequate to treat asthma and prevent attacks and provide quality life for patients, therefore, psychological therapies have been strongly advised globally since 1980 to help patients control their disease in the case of special psychological challenges. Cognitive therapy, behavioral therapy, music therapy, psychothe-

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rapy, self-management education etc. are some techniques of psychological interventions in this regard among which relaxation is defined as complete freedom from anxiety and musculoskeletal tensions and also balanced mental state which is usually achieved through physical massage, therapeutic touch, music therapy, biologic feedback, praying, meditation and mindfulness [13, 14].

Health-related quality of life is commonly referred to physical, mental, emotional and social aspects of disease or any medical condition in individuals [15], and there is a growing body of consensus to consider health-related quality of life as a main target of treatment [16] Unfortunately, the majority of asthmatic patients have low -quality lives as many studies indicate [17–19]. This low quality of life (QOL) is a predictive factor of psychological disorders like depression and anxiety as well as more manifestation of disease such as wheezing and cough and even lung dysfunction [20]. In 2009, Chiang *et al.* [21] showed the effect of a combined self-management and slow breathing on the reduction of anxiety and the consequent health improvement in children. Likely, functional relaxation (FR) was positively effective in ameliorating clinical respiratory parameters in 4 weeks in 64 adults with asthma [22]. Among several methods of relaxation, the PM showed perfectly improved quality of life in patients with asthma by 5 sessions of relaxation training with the Papworth technique; this method is based on the pathophysiology of patients with asthma (leading to PR ventilation attacks); it helps control and improve asthma by relaxation exercises [23]. This was also endorsed by many researchers, including Manzoni and colleagues who indicated long-term impact of meditation and relaxation on disease control [14].

With a 5–10% global prevalence, asthma, as a chronic condition which can strongly affect the quality of life of patients and care givers, needs comprehensive approach, including medications and psychological techniques to get the optimal control. This is why the current study aimed to assess the effectiveness of relaxation training with the Papworth technique among patients with asthma, considering reduced anxiety and improved quality of life.

Material and methods

Through a randomized controlled trial, 30 patients with asthma 20–45 years of age referring to a tertiary university hospital in Tehran enrolled two study groups (in a random manner), including cases (n = 30) and controls (n = 30). Any condition pretending asthma and its respiratory manifestations, infections and chronic diseases like diabetes mellitus, cancer, cardiovascular diseases and anemia were excluded. All the participants gave their informed consents after being perfectly explained about the aims, process and advantages of the study before being divided into two groups of control and intervention. The participants were also selected regarding their educational degree to be between high school diploma and Bachelor of science. Then, in both groups (at the end of the sixth session of the placebo group and at the end of the 12th week of the control group), the quality of life (using the SD-36 questionnaire) and anxiety (using the STAI questionnaire) were evaluated.

Relaxation training

This interventional program was done in 6 sessions listed in Table 1 for six weeks. The participants were assessed before and after each session by strong anxiety questionnaire and SF36 QOL questionnaire (a general standard tool with 36 parameters for assessing the quality of life of individuals that is filled in by the person involved) disregarding their groups. In other words, all participants are considered as box lines. However, after the sixth week of the relaxation program and at the end of the twelfth week, questionnaires will be examined as a follow-up.

Papworth method of relaxation

This method is a complex of behavioral training mostly focusing on more effective breathing and positions to facilitate it. The technique includes five training areas. For breathing, patients are taught to use diaphragmatic muscle instead of inappropriate accessory muscles of respiration and also to use nasal instead of mouth breathing. In stress control, people learn to recognize and control stressful conditions. Then, patients are encouraged to use an integration of appropriate breathing and relaxation techniques in daily activities [23, 24].

SF-36 questionnaire has been validated in Persian and contains 36 phrases in 8 areas of general health, physical performance, physical dysfunction, emotional dysfunction, body pain, social performance, fatigue/happiness and mental health. The questionnaire is scored totally between zero and 100. The higher the total score, the better the situation of patient's QOL. Inappropriate quality of life is considered if the obtained score is lower than 50% of the total.

Table 1. The schedule for relaxation training in 6 sessions throughout the study

Session	Time (min)	Short-term objectives	Training item
First	120	Breathing exercise	Breathing exercise
Second	120	Breathing exercise + stress identification	Breathing exercise
Third	120	Introduction to relaxation + head and body relaxation	Breathing exercise + head and body relaxation
Forth	120	Coping with anxiety	Breathing exercise + head and body relaxation
Fifth	120	Relaxation training (part 2)	Breathing and relaxation exercise
Sixth	120	Whole body relaxation without contract	Breathing and whole body relaxation exercise

Table 2. Age and sex classification of both case and control groups

	Categories	Groups		p-value
		Case n (%)	Control n (%)	
Age	20–30 (yrs)	6 (40)	6 (40)	0.830
	30–40 (yrs)	6 (40)	6 (40)	
	40–45 (yrs)	3 (20)	3 (20)	
Sex	Male	6 (40)	4 (27)	0.418
	Female	9 (60)	11 (73)	

Spielberger anxiety questionnaire (STAI) is a self-reporting questionnaire for anxiety also valid in the Persian language, which presents 40 short multiple-choice questions scored totally 20–80. This timeless questionnaire is usually used as a means to assess obvious (S) and hidden (T) anxiety set underlying long-term anxiety. Higher scores indicate higher levels of anxiety in the patient.

The used questionnaires were validated in Persian and all the participants got adequate information about the study to give their informed consents. They were able to quit the study whenever they wanted with no limitation or charges. All the private information was securely kept by the investigators. The study was approved by the ethics committee of Shahid Beheshti university of medical sciences in Dr Masih Daneshvari hospital.

Statistics

The most used statistical test was paired t-test to check the data and compare them before and after the interventions. Two groups including cases and controls empowered the study to conquer confounding factors because cases and controls were compared in two steps. The first step consisted in comparing individuals with their condition before intervention, and the second one included a comparison between two separate but matched populations with different experiences throughout the study (at the end of the sixth week). SPSS 20 was utilized to analyze the data. Quantitative data like the frequencies or comparative scores were reported by independent t-test while Chi-square test was used for qualitative data like educational degrees. The significance was considered 0.05 for 95% confidence interval with type one error of 0.05.

Results

Table 2 shows the demographics for participants in both groups. Totally 30 were recruited by the study divided into two 15-member groups of cases and controls. The cases included 6 males and 9 females and controls were 4 males and 11 females with no significant difference in this regard. The total mean of age were similarly 33 years for both groups, separately.

As can be seen in Table 3, the scores of the anxiety questionnaire (STAI) before and after the intervention were significantly different, and the mean scores obviously reduced after relaxation training among cases from 102.6 to 79.5 (P-value < 0.001). The scores were constant for cases through the follow-up phase (3, 5 or 12 weeks). This was while the mean scores of anxieties had no

Table 3. Pre-test and post-test scores for STAI questionnaire of obvious and hidden anxiety

Group	Case				Control	
Steps	**Pre-test**	**Post-test**	**Follow up**	**p-value**	**Pre-test**	**Post-test**
Obvious anxiety	50.60 ± 4.45	40.80 ± 4.09	40.47 ± 4.17	< 0.001	49.20 ± 4.72	49.53 ± 4.29
Hidden anxiety	52.07 ± 8.71	38.73 ± 8.61	42.07 ± 8.53	< 0.001	46.67 ± 6.63	41.13 ± 6.38
Total score	102.67 ± 9.01	79.53 ± 9.06	82.53 ± 9.06	< 0.001	95.87 ± 10.01	90.60 ± 10.34

Table 4. Means of the subscales of quality of life through pre/post-test and follow up stages

Groups	Case				Control	
Stages	**Pre-test**	**Post-test**	**Follow up**	**p-value**	**Pre-test**	**Post-test**
General health	49.33 ± 21.87	68.33 ± 16.33	67.60 ± 15.09	< 0.001	47:00 ± 21.20	64.27 ± 20.38
Physical performance	36.33 ± 32.43	55.33 ± 21.08	61.60 ± 17.98	< 0.001	15.67 ± 27.77	22.40 ± 29.31
Physical limitations	38.40 ± 39.54	82.27 ± 20.37	75.93 ± 23.77	< 0.001	49.20 ± 35.36	43.00 ± 36.98
Emotional limitations	46.07 ± 23.10	64.73 ± 19.70	71.07 ± 14.39	< 0.001	49.67 ± 16.54	47.13 ± 18.16
Bodily pain	51.47 ± 18.80	63.40 ± 14.60	66.47 ± 16.70	< 0.001	57.07 ± 20.45	62.80 ± 14.06
Social performance	54.67 ± 27.75	66.33 ± 17.26	69.07 ± 14.42	< 0.001	50.27 ± 23.13	47.33 ± 22.78
Vitality (fatigue/happiness)	61.00 ± 18.99	74.73 ± 14.44	74.73 ± 16.27	< 0.001	49.40 ± 32.18	48.27 ± 31.5
Mental health	42.80 ± 12.42	71.53 ± 14.34	72.93 ± 12.76	< 0.001	42.00 ± 16.84	36.33 ± 19.61
Quality of life	380.07 ± 124.51	546.67 ± 90.12	559.40 ± 81.37	< 0.001	360.27 ± 103.50	352.53 ± 99.91

change in the control group. The detailed scores in different aspects and indices of the quality of life are summarized in Table 4 which shows statistically different results compared before and after the intervention. The scores of the QOL grew obviously after relaxation training in the case group from 308.07 to 546.6 ($P < 0.001$). Follow-up results showed similar findings to post-test in cases. Controls presented no significant changes in scores for QOL test as expected.

Using paired t-test, t-values were 0.1, 0.367 and 0.147 for state, trait, and total anxiety scores, respectively, considering a freedom degree (d) of 14.

Discussion

The current study found perfect impacts of breathing training by the Papworth technique on anxiety reduction and the improvement of the quality of life which were almost intact during follow-up phase for 12 weeks. This is in line with a study by Holloway *et al.* [23] published in 2007 that used the Papworth method of relaxation in 85 asthma patients and assessed the quality of life with the St. George's Respiratory Symptoms Questionnaire (SGRQ). They indicated an improved quality of life and much controlled symptoms and mood in asthma patients although no significant effect was observed in terms of objective measures of lung function. Our study also assessed anxiety in participants and the effect of relaxation training on it to find similar reduction in anxiety and depression as Holloway did. The current study did not assess the objective measures in patients during the intervention and after it; but Holloway *et al.* suggested that relaxation training and specifically the Papworth method could not affect the chronic underlying pathophysiological features of asthma [23].

Chiang *et al.* [21] published an article in 2009 to indicate the effect of relaxation-breathing training on anxiety and asthma manifestations among 6–14-year-old children. They not only found improved symptoms and signs in patients, but also detected insignificant changes in some physiological variables, unlike what Holloway *et al.* [23] concluded.

Adjunctive therapies like relaxation training, group therapy, cognitive therapy, even massage therapy and other similar treatment have been focused for decades to help classic medical treatments achieve improvement in many chronic

diseases like asthma [25–29]. The majority of them have also endorsed the long-term stability and responsibility of the named therapies as well. Chiang *et al.* [21] disclosed the efficacy of a combination of self-management and breathing training in the control of anxiety among children with asthma.

Concerning the quality of life in asthma, Lahmann *et al.* [22] assessed the impacts of functional relaxation and guided imagery methods on the QOL in asthma cases to get hopeful results in terms of clinical and specifically respiratory parameters in the long term.

The current study indicated that cognitive therapy through relaxation training is able to ameliorate the quality of life in patients with asthma as well as perfectly improve the subscales of personal function like general health, physical performance, mental health, social performance, etc. The Papworth technique is a relaxation method through which individuals can change physical, emotional and stress behaviors using their conscious thought. This technique is chiefly based on muscle relaxation and the patient learning how to achieve a mental relaxation.

To sum up, as an accessory helpful treatment, relaxation training by the Papworth technique sounds to be perfectly able to control stressful conditions in patients with asthma to prevent disease attacks and improve the quality of life. So, psychological teams can be advised to referral centers for asthma in the relevant clinics to help people get training in this regard.

Conclusion

As an accessory helpful treatment, relaxation training by the Papworth technique sounds to be perfectly able to control stressful conditions in patients with asthma to prevent disease attacks and improve the quality of life. So, psychological teams can be advised to referral centers for asthma in the relevant clinics to help people get training in this regard.

Limitation

The limitations of the research concern the age of the participants. Because with age, mental disorders increase in individuals. In this way, the same research implementation can be helpful in the classification of individuals based on the age of the participants. Another limitation of the research is the need for a continuous contribution of participants to the relaxation sessions. If reduced, will increase the chance for patients to attend.

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Conflict of interest and funding

The authors declare that there is no conflict of interests regarding the publication of this paper.

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References:

1. Oni OA, Erhabor GE, Oluboyo PO. Does health-related quality of life in asthma patients correlate with the clinical indices? South African Family Practice. 2014; 56(2): 134–138, doi: 10.1080/20786204.2014.10855351.
2. Deshmukh VM, Toelle BG, Usherwood T, et al. Anxiety, panic and adult asthma: a cognitive-behavioral perspective. Respir Med. 2007; 101(2): 194–202, doi: 10.1016/j.rmed.2006.05.005, indexed in Pubmed: 16781132.
3. Lehrer PM, Karavidas MK, Lu SE, et al. Psychological treatment of comorbid asthma and panic disorder: a pilot study. J Anxiety Disord. 2008; 22(4): 671–683, doi: 10.1016/j.janxdis.2007.07.001, indexed in Pubmed: 17693054.
4. Forsythe P, Ebeling C, Gordon JR, et al. Opposing effects of short- and long-term stress on airway inflammation. Am J Respir Crit Care Med. 2004; 169(2): 220–226, doi: 10.1164/rccm.200307-979OC, indexed in Pubmed: 14604839.
5. Teiramaa E. Psychosocial and psychic factors and age at onset of asthma. J Psychosom Res. 1979; 23(1): 27–37, indexed in Pubmed: 480278.
6. Tovt-Korshynska MI, Dew MA, Chopey IV, et al. Gender differences in psychological distress in adults with asthma. J Psychosom Res. 2001; 51(5): 629–637, indexed in Pubmed: 11728503.
7. Desormeau P, Walsh K, Segal Z. Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy. The Oxford Handbook of Stress and Mental Health. 2018, doi: 10.1093/oxfordhb/9780190681777.013.33.
8. Opolski M, Wilson I. Asthma and depression: a pragmatic review of the literature and recommendations for future research. Clin Pract Epidemiol Ment Health. 2005; 1: 18, doi: 10.1186/1745-0179-1-18, indexed in Pubmed: 16185365.
9. Vila G, Hayder R, Bertrand C, et al. Psychopathology and quality of life for adolescents with asthma and their parents. Psychosomatics. 2003; 44(4): 319–328, doi: 10.1176/appi.psy.44.4.319, indexed in Pubmed: 12832598.
10. Janssens T, Verleden G, De Peuter S, et al. The influence of fear of symptoms and perceived control on asthma symptom perception. J Psychosom Res. 2011; 71(3): 154–159, doi: 10.1016/j.jpsychores.2011.04.005, indexed in Pubmed: 21843750.
11. Janssens T, Verleden G, De Peuter S, et al. Inaccurate perception of asthma symptoms: a cognitive-affective framework and implications for asthma treatment. Clin Psychol Rev. 2009; 29(4): 317–327, doi: 10.1016/j.cpr.2009.02.006, indexed in Pubmed: 19285771.
12. Campbell TS, Lavoie KL, Bacon SL, et al. Asthma self-efficacy, high frequency heart rate variability, and airflow obstruction during negative affect in daily life. Int J Psychophysiol. 2006; 62(1): 109–114, doi: 10.1016/j.ijpsycho.2006.02.005, indexed in Pubmed: 16632007.
13. Baiardini I, Sicuro F, Balbi F, et al. Psychological aspects in asthma: do psychological factors affect asthma management?

Asthma Res Pract. 2015; 1: 7, doi: 10.1186/s40733-015-0007-1, indexed in Pubmed: 27965761.
14. Manzoni GM, Pagnini F, Castelnuovo G, et al. Relaxation training for anxiety: a ten-years systematic review with meta-analysis. BMC Psychiatry. 2008; 8: 41, doi: 10.1186/1471-244X-8-41, indexed in Pubmed: 18518981.
15. Mosen DM, Schatz M, Magid DJ, et al. The relationship between asthma-specific quality of life and asthma control. J Asthma. 2007; 44(5): 391–395, doi: 10.1080/02770900701364296, indexed in Pubmed: 17613636.
16. Quality of Life among Patients with Type 2 Diabetes Mellitus. International Journal of Science and Research (IJSR). 2017; 6(12): 513–516, doi: 10.21275/art20178761.
17. Oğuztürk O, Ekici A, Kara M, et al. Psychological status and quality of life in elderly patients with asthma. Psychosomatics. 2005; 46(1): 41–46, doi: 10.1176/appi.psy.46.1.41, indexed in Pubmed: 15765820.
18. Başar MM, Ekici A, Bulcun E, et al. Negative mood and quality of life in patients with asthma. Qual Life Res. 2006; 15(1): 49–56, doi: 10.1007/s11136-005-8869-y, indexed in Pubmed: 16411030.
19. Almada Lobo F, Almada-Lobo B. Quality of life in asthmatic outpatients. J Asthma. 2008; 45(1): 27–32, doi: 10.1080/02770900701815495, indexed in Pubmed: 18259992.
20. Siroux V, Boudier A, Anto JM, et al. Quality-of-life and asthma-severity in general population asthmatics: results of the ECRHS II study. Allergy. 2008; 63(5): 547–554, doi: 10.1111/j.1398-9995.2008.01638.x, indexed in Pubmed: 18394129.
21. Chiang LC, Ma WF, Huang JL, et al. Effect of relaxation-breathing training on anxiety and asthma signs/symptoms of children with moderate-to-severe asthma: a randomized controlled trial. Int J Nurs Stud. 2009; 46(8): 1061–1070, doi: 10.1016/j.ijnurstu.2009.01.013, indexed in Pubmed: 19246041.
22. Lahmann C, Nickel M, Schuster T, et al. Functional relaxation and guided imagery as complementary therapy in asthma: a randomized controlled clinical trial. Psychother Psychosom. 2009; 78(4): 233–239, doi: 10.1159/000214445, indexed in Pubmed: 19401624.
23. Holloway EA, West RJ. Integrated breathing and relaxation training (the Papworth method) for adults with asthma in primary care: a randomised controlled trial. Thorax. 2007; 62(12): 1039–1042, doi: 10.1136/thx.2006.076430, indexed in Pubmed: 17573445.
24. Thomas M, Bruton A. Breathing exercises for asthma. Breathe. 2014; 10(4): 312–322, doi: 10.1183/20734735.008414.
25. Huntley A, White AR, Ernst E. Relaxation therapies for asthma: a systematic review. Thorax. 2002; 57(2): 127–131, doi: 10.1136/thorax.57.2.127, indexed in Pubmed: 11828041.
26. Nowobilski R, Czyz P, Furgał M, et al. [The effect of music therapy on anxiety level in hospitalized asthmatic patients]. Pol Arch Med Wewn. 2005; 113(4): 314–319, indexed in Pubmed: 16209244.
27. Glickman-Simon R, Lindsay T. Yoga for back pain, cranberry for cystitis prevention, soy isoflavones for hot flashes, curcumin for pre-diabetes, and breathing retraining for asthma. Explore (NY). 2013; 9(4): 251–254, doi: 10.1016/j.explore.2013.04.010, indexed in Pubmed: 23906104.
28. Peters TE, Fritz GK. Psychological considerations of the child with asthma. Child Adolesc Psychiatr Clin N Am. 2010; 19(2): 319–33, ix, doi: 10.1016/j.chc.2010.01.006, indexed in Pubmed: 20478502.
29. Grover N, Kumaraiah V, Prasadrao PS, et al. Cognitive behavioural intervention in bronchial asthma. J Assoc Physicians India. 2002; 50: 896–900, indexed in Pubmed: 12126343.